

REMARKS

Claim Rejections 35 U.S.C. § 103 (a)

The Examiner has rejected claims 9, 10, 16, 17, and 19 under 35 U.S.C. § 103 (a) as being unpatentable over Uzoh et al. (U.S. 5,807,165).

Applicant respectfully disagrees with the Examiner. Applicant has amended claims 9, 10, 16, and 17. Support is provided by the specification (US 2004/0060814 A1) including in paragraphs [0015], [0019], [0021], [0024], and [0025].

Claim 9, as amended, of Applicant's claimed invention claims an apparatus (100) comprising: a platen (110); a polishing pad (120) disposed over said platen; a segmented cathode (130) disposed around edge of said polishing pad and between said platen and a rear surface of said polishing pad; a slurry (150) disposed on said polishing pad; a wafer (160) disposed on said polishing pad and said slurry, said wafer having a body that is electrically conductive; a wafer carrier (180) to hold said wafer; a chiller or heater to circulate a fluid within said platen and within said wafer carrier; a segmented anode disposed between a rear surface of said body of said wafer and said wafer carrier, said segmented anode being partitioned into small components that may be electrically adjusted separately to change polishing rates and polishing selectivities for different materials in a surface layer of said wafer; an enclosure disposed around said platen and said wafer carrier; a power supply (190) to apply a voltage or current between said segmented cathode and said segmented anode; and a computer (200) to vary said voltage or said current to improve uniformity of said polishing rates and said polishing selectivities. See Figure 1.

In contrast, the Uzoh et al. reference cited by the Examiner teaches springs (65) to mechanically press anode electrodes (67) against an edge of a wafer (W) held in a wafer carrier (66), but fails to teach a segmented cathode located around an edge of a polishing pad (64), and fails to teach a segmented anode disposed between a rear surface of a body of the wafer (W) and the wafer carrier (66), the segmented anode being partitioned into small components that may be electrically adjusted separately to change polishing rates and polishing selectivities for different materials in a surface layer of the wafer. See Figures 8-10. Also, see Col. 6, lines 4-5.

Despite the assertion of the Examiner, Applicant wishes to respectfully point out to the Examiner that a segmented anode located between a rear surface of a body of the wafer and the wafer carrier is not an obvious element of an embodiment of Applicant's invention, as claimed in claim 9, as amended.

Applicant reiterates that this element of Applicant's claimed invention, as claimed in claim 9, as amended, is not merely a rearrangement as stated by the Examiner.

Furthermore, Applicant respectfully disagrees with the Examiner's opinion that location of the anode does not change (affect) operation of the apparatus.

Thus, Uzoh et al. will not render Applicant's claimed invention, as claimed in claim 9, obvious to one of ordinary skill in the art of making semiconductors at the time the invention was made.

Claims 10, 16, 17, and 19 are dependent on claim 9, as amended.

Thus, Uzoh et al. will also not render Applicant's claimed invention, as claimed in claims 10, 16, 17, and 19, obvious to one of ordinary skill in the art of making semiconductors at the time the invention was made.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 9, 10, 16, 17, and 19 under 35 U.S.C. § 103 (a).

Claim Rejections 35 U.S.C. § 103 (a)

The Examiner has rejected claim 18 under 35 U.S.C. § 103 (a) as being unpatentable over Uzoh et al. (U.S. 5,807,165) in view of Emesh et al. (U.S. 6,572,755 B2).

Applicant respectfully disagrees with the Examiner. Applicant has amended claim 18. Claim 18 is dependent on claim 9, as amended. See previous sections above.

Emesh et al. teaches an electrochemical **deposition** process controlled by temperature. See col. 10, lines 15-21. However, the deposition process is different from a **removal** process in the present invention.

Thus, a combination of Uzoh et al. and Emesh et al., even if possible, will not render Applicant's claimed invention, as claimed in claim 18, obvious to one of ordinary skill in the art of making semiconductors at the time the invention was made.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claim 18 under 35 U.S.C. § 103 (a).

Claim Rejections 35 U.S.C. § 103 (a)

The Examiner has rejected claims 20-25 under 35 U.S.C. § 103 (a) as being unpatentable over Uzoh et al. (U.S. 5,807,165) in view of Parikh et al. (U.S. 2003/0040830).

Applicant respectfully disagrees with the Examiner. Applicant has amended claim 21. Claims 20-25 are dependent on claim 9, as amended. See previous sections above.

Parikh et al. teaches changing process parameters. See paragraphs [0019] and [0035]. However, Parikh et al. teaches a metrology station (114) and a metrology analyzer (114) that are external to and separate from a process tool, unlike the integrated apparatus claimed in the present invention.

Thus, a combination of Uzoh et al. and Parikh et al., even if possible, will not render Applicant's claimed invention, as claimed in claims 20-25, obvious to one of ordinary skill in the art of making semiconductors at the time the invention was made.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 20-25 under 35 U.S.C. § 103 (a).

Claim Rejections 35 U.S.C. § 103 (a)

The Examiner has rejected claims 26-28 under 35 U.S.C. § 103 (a) as being unpatentable over Uzoh et al. (U.S. 5,807,165) in view of Walters et al. (U.S. 6,767,427).

Applicant respectfully disagrees with the Examiner. Applicant has amended claims 26-28. Claims 26-28 are dependent on claim 9, as amended. See previous sections above.

Walters et al. teaches PID software. See col. 6, lines 15-17. However, Walters et al. teaches a controller for an off-line conditioning of a polishing pad, but not to be used during a removal process as claimed in the present invention.

Thus, a combination of Uzoh et al. and Walters et al., even if possible, will not render Applicant's claimed invention, as claimed in claims 26-28, obvious to one of ordinary skill in the art of making semiconductors at the time the invention was made.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 26-28 under 35 U.S.C. § 103 (a).

Conclusion

Applicant believes that all claims pending, including claims 9, 10, and 16-28, are now in condition for allowance so such action is earnestly solicited at the earliest possible date.

Pursuant to 37 C.F.R. § 1.136 (a) (3), Applicant hereby requests and authorizes the U.S. Patent and Trademark Office to treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time.

Should any additional charge or fee, including extension of time fees and fees under 37 C.F.R. § 1.16 and § 1.17, be required, or otherwise needed, please charge Deposit Account No. 50-0221.

If a telephone interview would in any way expedite the prosecution of this application, the Examiner is invited to contact the undersigned at (408) 653-7897.

Respectfully submitted,
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